December 8, 1999

Via Hand Delivery

Magalie Roman Salas, Secretary
Federal Communications Commission
445 12th St., S.W., Room TW-B204
Washington, D.C. 20554

Re: Written *Ex Parte* Communication in ET Docket No. 98-206

Dear Ms. Salas:

SkyBridge L.L.C. ("SkyBridge"), by its undersigned counsel, and the Fixed Wireless Communications Coalition ("FWCC"), by its undersigned co-chairmen (collectively, the "Parties"), hereby jointly supplement their individual comments in the above-captioned proceeding. As was briefly described in the Parties' November 12, 1999, letter to Dale Hatfield, Chief of the Office of Engineering and Technology ("November 12 Letter"), and as is described in greater detail below, the Parties have, after lengthy negotiations, agreed upon a proposed regulatory structure to govern the shared use of the 10.7-11.7 GHz band by the fixed service ("FS") and nongeostationary orbit ("NGSO") fixed service satellite ("FSS") systems. The parties request that the Commission adopt their proposal as a substitute for relevant provisions set out in the Notice of Proposed Rulemaking ("NPRM")[1/] in this proceeding.

The Parties' proposal differs in several important respects from both the NGSO/FS regulatory scheme set out in the NPRM and from the relevant views previously expressed individually by the Parties in response to the NPRM. The Parties believe that the instant proposal is superior to the NGSO FSS/FS regulatory scheme set out in the NPRM -- in terms of both the level of protection accorded existing and new FS systems and the degree of flexibility afforded NGSO FSS systems -- and that the public interest would be best served by adoption of the proposal set out below.

I. BACKGROUND

The NPRM proposes to restrict use of the 10.7-11.7 GHz band by NGSO FSS systems to nonubiquitous "Gateway" terminals, in recognition of the

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1/ Amendment of Parts 2 and 25 of the Commission's Rules, 14 FCC Rcd 1131 (1998).

difficulty (if not impossibility) of frequency sharing among ubiquitous earth stations and terrestrial facilities.[2/] In furtherance of this goal, the NPRM proposes to define an NGSO FSS Gateway in a manner intended to ensure that Gateways are, indeed, nonubiquitous.[3/] In an effort to further protect the FS, the NPRM proposed the establishment of "exclusion zones" -- basically, a circle with a 100 km radius drawn around the city center of the 50 largest metropolitan areas -- in which Gateways would not be permitted to be located.[4/] The theory underlying this concept was that these areas were thought to represent the largest concentration of existing FS systems, and by excluding NGSO Gateways from these areas, the ability of those FS systems to expand would be protected.

In general, as reflected in the Parties' respective comments in this proceeding, they support limiting NGSO operations in the 10.7-11.7 GHz band to Gateways, including the adoption of a restrictive definition of what constitutes a Gateway. Where the Parties differed most was on their view of the wisdom and efficacy of the exclusion zone concept. The FWCC supported the approach, while SkyBridge opposed it.

As noted supra, the Parties have been informally discussing areas of mutual concern for over two years. Over the course of the past few months, these discussions intensified, with a specific goal of attempting to bridge the gap between each Party's favored regulatory approach. Meeting in person or by conference call at least once per week, the Parties were able to build on the general regulatory approach set out in the NPRM, adjusting it to better fit the actual circumstances that will confront each industry in the future.

Obviously, the FWCC does not presume to speak for all potentially affected terrestrial users of the band, nor does SkyBridge presume to speak for all proposed NGSO FSS systems. Thus, as the Parties' November 12 Letter emphasized -- and it is reemphasized here -- the instant proposals should be placed on public notice for comment by other interested parties.

2/ Id. at 1142-44.

3/ Id.

4/ Id. at 1146-47.

II. PROPOSED REGULATIONS

A. Definition of a Gateway

Both Parties agreed that Gateways should be defined so as to exclude both the possibility that ubiquitous user terminals could be deployed in the band and the likelihood that, in the aggregate, a large number of Gateways would operate in the band. Their proposed definition is set out below.

47 C.F.R. § 25.__. DEFINITION OF NGSO FSS GATEWAY

A Gateway operating in the 10.7-11.7 GHz band shall consist of an earth station complex providing radio frequency resources to NGSO FSS space stations which allow customer-premises earth stations to interconnect with long distance or other intercity networks or other non-collocated customer-premises earth stations; a Gateway shall not connect directly to customer-owned or customer-operated private distribution networks. Gateways shall have no less than three operational earth station antennas, each of which shall be no less than 2.5 meters in diameter; for non-parabolic antenna designs, the mainbeam beamwidth of the antenna shall not exceed the mainbeam beamwidth of a standard 2.5 meter parabolic antenna.

This definition meets the needs of NGSO systems for flexibility, while ensuring that Gateways would not become ubiquitous. In agreeing to include a minimum antenna size in the definition, as well as the minimum number of antennas, SkyBridge reversed its earlier opposition to such restrictions. The Parties believe that the foregoing provides an effective balance between the competing needs of the two services.

B. FS Growth Zones

Obviously, the primary focus of the discussions among the Parties involved the proposed exclusion zones. Working together, the Parties undertook a more methodical review of the actual state of the FS' use of the 10.7-11.7 GHz band, reviewing both Commission and Comsearch data bases. An examination of the locations of existing FS sites and the growth patterns over the last few years in the affected band revealed that: (1) the proposed exclusion zones protected huge areas in which there was little or no existing FS activity or recent or anticipated growth; and

(2) many areas of intense FS use, and anticipated growth, fell outside of the exclusion zones.[5/]

Rather than "protect" areas in no apparent need thereof, the Parties developed the concept of an "FS Growth Zone," and attempted to define it in such a way that it actually protected areas in which growth was reasonably anticipated, without unnecessarily constraining the siting of NGSO Gateways. The Parties' proposed definition of an FS Growth Zone -- which would replace the NPRM's exclusion zones -- is set out below.

47 C.F.R. § 25.__. DEFINITION OF FS GROWTH ZONE

An FS Growth Zone is defined as any county in which, based on a semi-annual determination, at least 30 FS channels are licensed to transmit in the 10.7-11.7 GHz band. Prior to the effective date of this section, the Commission shall issue a Public Notice listing the counties that meet this criterion at that time. At six-month intervals thereafter, the Commission shall issue a new list of counties that qualify as FS Growth Zones.

Based on the FWCC's members' own experience, as confirmed by a review of the existing 10.7-11.7 GHz data bases, FS growth in this band generally evolves from existing systems. The Parties first agreed that using the political borders of counties -- information already contained in the licensing data bases -- represented the most practical starting point for defining a Growth Zone. Then, the Parties identified those counties with the largest concentration of links, and agreed that those counties in which 30 or more transmit channels are licensed (in the aggregate, this is approximately 100 counties nationwide) represent the most critical concentration of FS usage and the areas with the most likely substantial potential for growth.[6/]

Further, the parties agreed that the list of counties that qualify as an FS Growth Zone should not be static. If FS growth in a particular county not previously qualified as a Growth Zone reaches the 30 channel threshold, it should be added to

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[5/] The data revealed, inter alia, that over the past two years, there has been, in the nationwide aggregate, a decrease in the number of FS links in this band. This may be the result of fiber gradually replacing some links more rapidly than new links are added.

[6/] The Parties are preparing, and will submit as soon as practicable, a map showing both the counties that, according to the most recent data available to the Parties, would qualify as an FS Growth Zone, and the exclusion zones proposed in the NPRM.

the list. Conversely, if a number of links in a county that previously qualified as a Growth Zone are taken out of service (e.g., conversion to fiber), to the point that fewer than 30 transmit transmitters are licensed, that county should be deleted from the list. So as to provide a measure of certainty for an NGSO operator planning to site a Gateway in a particular county, the list of counties qualifying as an FS Growth Zone would be updated at six-month intervals.

As noted above, the Parties agreed that, as opposed to the NPRM's exclusion zone restrictions, Gateways should not be per se barred from FS Growth Zones. The practical effect on FS and NGSO operations in a particular county qualifying as an FS Growth Zone is discussed below.

C. Siting Gateways in FS Growth Zones

The parties agreed that NGSO FSS systems should be free to locate Gateways in an FS Growth Zone -- subject, of course, to the relevant coordination procedures. However, if a Gateway operator chooses to take advantage of this opportunity, certain obligations would be imposed that are intended to offset the potential impact on FS growth that might otherwise result from such a decision.

47.C.F.R. § 25.__. OPERATION OF NGSO FSS GATEWAYS IN FS GROWTH ZONES

Gateways operating in the 10.7-11.7 GHz band may be located in FS Growth Zones consistent with the following conditions:

(a) The Gateway shall be located in the FS Growth Zone in accordance with standard coordination procedures, except that the coordination shall assume that all FS stations relevant to the coordination are operating on all FS transmit channels in the 10.7-11.7 GHz band.

(b) If an applicant seeking to operate a new FS station in a FS Growth Zone would be precluded, under the standard coordination procedures, from doing so at a particular location due to the existence of a Gateway, the Gateway licensee shall, at the FS applicant's request, be responsible for reducing the effect on the Gateway of the power radiated by the proposed FS station to the greatest extent practicable, consistent with sound engineering practices and in a manner that does not materially degrade the operational capabilities of the Gateway, up to a maximum of 20 dB below the level derived from the free-space coordination calculation.

(c) In order to locate a Gateway at a particular site within an FS Growth Zone that otherwise would not be acceptable under the standard coordination procedures, an applicant may voluntarily agree to accept, from a specified azimuth, a certain level of interference from a particular FS station in excess of the level that would be consistent with the standard coordination procedures. To the extent that a Gateway is sited pursuant to this subsection, the licensee shall in the future be obligated to continue to accept, from that specified azimuth, that same aggregate level of interference from any FS stations.

(d) In coordinating a new FS station with a Gateway located in an FS Growth Zone, the coordination shall not take into account elevation angles for the Gateway's earth stations below the lowest geometrical elevation angle that can be employed by the Gateway's earth stations for each direction of azimuth, taking into account the specific characteristics of the relevant satellite constellation.

(e) If, at the time of submission of a request for coordination of a particular Gateway site to a recognized frequency coordinator, that site is located outside of any FS Growth Zone, any Gateway facility subsequently licensed to operate at that site shall not be subject to the provisions of subsections (a), (b), (c), or (d) of this section, regardless of whether the county in which that site is located subsequently becomes a FS Growth Zone.

Thus, if a Gateway operator chooses to locate the facility within a FS Growth Zone, in undertaking the initial coordination, it must be assumed that each FS system located in the Growth Zone is operating on all allocated transmit channels. This will prevent the siting of a Gateway in a Growth Zone from inhibiting the most likely evolution of existing FS links, i.e., the addition of new channels to those links.

Second, under certain circumstances, the operator of a NGSO Gateway located in a Growth Zone would be required, at the request of a FS applicant, to reduce the anticipated impact of the proposed FS transmissions on the Gateway's operations up to 20 dB below the standard free-space coordination calculation -- at the Gateway's expense. Thus, if a proposed new FS link cannot be installed under the standard coordination rules as the result of the presence of a NGSO Gateway in a FS Growth Zone, the Gateway licensee shall take appropriate steps (e.g., install

shielding) to reduce the anticipated "free-space" impact of the proposed FS link on the Gateway to the greatest extent practicable, up to a maximum of 20 dB.

This obligation is limited only by sound engineering practices and the recognition that the undertaking (e.g., installation of shielding) should not materially degrade the operational capabilities of the Gateway. For example, if a Gateway operator previously had installed shielding to accommodate a new FS link located to the north of the Gateway, and later, another FS operator sought to invoke the shielding obligation for a link to the south of the Gateway, it may be the case that, because of, e.g., internal reflection problems, the second link cannot be accommodated without materially degrading the Gateway's operations.[7/] The Parties agreed that it would be unfair to impose such a burden on the Gateway.

A third means of protecting FS expansion in a FS Growth Zone involves the situation in which a proposed Gateway site located in a FS Growth Zone cannot be cleared under the standard coordination procedures. If the Gateway operator nonetheless chooses to employ that site, i.e., by agreeing to accept a certain level of interference above the norm from a particular FS station, the Gateway licensee shall remain obligated to accept that same aggregate level of interference from that azimuth from any other FS stations.

A fourth condition relates to the fact that, although a NGSO Gateway may effectively operate in an omnidirectional manner (over time), it does not necessarily use the same elevation angle in all directions. In coordinating a new FS station in a FS Growth Zone in which a Gateway is already located, only the actual lowest elevation angle for each direction of azimuth that actually can be employed by the Gateway should be considered, consistent with the relevant NGSO FSS constellation's specific characteristics. For example, SkyBridge's constellation operates at a 53° inclined orbit; none of the spacecraft is passing directly over the North Pole. Thus, while a SkyBridge Gateway antenna may track through the 0° azimuth while locked onto a given satellite, the minimum angle of elevation for that azimuth will be relatively high; it certainly will be much higher than the 6° minimum that might be employed for tracking a satellite at, e.g., the 270° azimuth. In this case, an FS operator seeking to site a new link to the north of the Gateway should be constrained only by the Gateway's actual worst-case operational capabilities in that direction.

Finally, the parties agree that if a Gateway is sited outside of a Growth Zone, the fact that the county in question may later become a Growth Zone should

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[7/] This problem is discussed at some length in the Comsearch study attached as Appendix D to SkyBridge's March 2, 1999, comments in the instant proceeding.

not retroactively alter the Gateway operator's regulatory burdens. The determination as to a particular county's status as a Growth Zone is based on the timing of the Gateway applicant's request for coordination of the site. If, at the time of submission of the coordination request, the site is in a county that is not on the Commission's most recently released Growth Zone list (as updated semi-annually), then the above-described obligations will not attach to that Gateway. If, however, that county subsequently reaches the 30-transmitter threshold and is added to the Growth Zone list, any Gateway that is thereafter sought to be coordinated at a site in that county would be subject to the full obligations set out above.

CONCLUSION

The Parties believe that the foregoing regulatory scheme represents a substantial improvement over the relevant proposals set out in the NPRM; both NGSO FSS and FS interests are better protected, without imposing unnecessary burdens on either. As noted in the Parties' November 12 Letter, the Parties request

that the Commission issue a public notice seeking comment on the above-described regulatory scheme.

Respectfully submitted,

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